

Decimal Sums and Differences

Reporting Category Computation and Estimation

Topic Adding and subtracting numbers with decimals

Materials

- Base-10 blocks (large cube, flats, rods, units)
- Decimal Grids (attached)
- Place-Value Chart
- Calculators

Vocabulary

estimate, add, sum, subtract, difference, decimal, tenths, hundredths, thousandths, decimal point, leading zero, place value

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Present the following word problem to the class: "You want to figure out how far you drove in two days. The first day you drove 120 miles. The second day you drove 19 miles. How far did you drive?" Have students estimate the answer. Next, have students figure out this scenario: "You want to figure out exactly how far you walked in two days. The first day you walked 1.2 miles, and the second day you walked 0.19 miles. How far did you walk?" After the students have had a minute to think about the problem, ask for some estimates of the answer. Stress *estimating* the answer first. After estimates have been given, ask the students to compare the two problems.
2. Have students use base-10 blocks or decimal grids to show each number in the second problem and combine them.
3. Discuss how to solve the problem by using pencil and paper to line up the decimal points and get the sum of 1.39.
4. Have students write and exchange their own story problems involving decimal sums and differences. Have them use calculators to check correctness of answers.
5. Have students solve more problems like the one above, including tenths, hundredths, and thousandths, e.g., $3.9 + 2.046$. Discuss how estimating helps you know whether your answer is reasonable. Allow students to use calculators to check their answers.
6. Give students story problems involving decimals to add or subtract.

Assessment

- **Questions**
 - Why is it important to carefully line up digits in decimal numbers when adding and subtracting them?

- How is the process of adding or subtracting decimal numbers similar to the process of adding or subtracting whole numbers? How is it different?
- **Journal/Writing Prompts**
 - Explain how adding whole numbers is similar to and/or different from adding numbers with decimals.
 - Draw a pictorial model of the decimal numbers being added or subtracted to show regrouping and how you get your answer.
- **Other**
 - Have students use random number generators or playing cards to create two decimal numbers and add and subtract them.
 - Model making change with coins, and write the problem to show the addition and subtraction as a check.

Extensions and Connections (for all students)

- Use commercial ads in the newspaper or on the Internet to find the cost of particular items to find the total sum.
- Using the same ads as above, give students a given dollar amount and have them choose items to purchase. Determine the total costs and the amount of change they will get from their dollar amount.

Strategies for Differentiation

- Have students use a talking calculator and/or a large-number calculator.
- Have students use a wall chart and/or individual mats to order the base-10 blocks.
- Have students use a math software program to practice addition and subtraction of numbers with and without decimals.
- Have students use colored stickers, puffy paint, sequins, etc., to represent decimals on paper. A vertical red line is used as a guide for placement of the decimals. The decimal representations should be on the paper prior to writing the digits of the numbers with decimals and adding or subtracting.
- Have students use a template in a word processing program to fill in the digits of the numbers with decimals prior to adding or subtracting.
- Have students use a colored pencil, marker, crayon, highlighter, etc., to draw a straight vertical line connecting the decimals in an addition or subtraction problem.
- Have students use transparent colored counters to represent the decimal(s) when adding or subtracting numbers with decimals.
- Have students use a word processing program or template to complete their story problems.
- Have students dictate their story problems into a recorder or a speech-to-text program.
- Set up a classroom store, and have students purchase items and make change.

Decimal Grids

Name _____ Date _____

FLAT

RODS

[illegible]

UNITS

[illegible]

UNITS

[illegible]